



ANIMAL WELFARE COMPLAINT

Complaint No.	Date Entered:		Process	ed By:		
AC21-186	AC21-186 March 22, 2021		Sean Rehurek			
Referred To:				Reply Due:		
CAROLYN MCKINNIE April 21, 2021						
Facility or Person Complaint Filed Against						
Name:			Custom	Customer No.: License No.:		
THE UNIVERSITY	THE UNIVERSITY OF ARIZONA		1044			
Address:		•		Email Addr	ess:	
1501 N. CAMPBELL AVE., ROOM 1126						
P O BOX 245092		Stata	1	Dhama Na i		
City:			State: Phone No.: $\wedge 7$ (b) (6), (b) (7			
Tuscoli	C	AL	Cormotion			
Complainant Information						
Name: (b) (6), (b) (7)(C), (b) (7)(D)			PCRM			
Address:				Email Addr	ess:	
			\mathfrak{D} (6), \mathfrak{D} (7)(0), \mathfrak{D} \mathfrak{D} pcrm.org			
		•				
City:		State:]	Phone No.:		
How was the Compla	unt received?					
Email						
Details of Complaint						
see attached.						
Results:						
Animal Care inspecto	ors conduct unanno	unced inspectio	ns for all	USDA register	red and licensed	
facilities. Our authori	ty is to ensure that	they meet the s	tandards r	equired by Fec	leral regulations. We	
also perform inspecti	ons in response to v	valid concerns a	ind compla	aints received	from the public to	
ensure the well-being	, of the animals and	l compliance w	th Federal	law. This con	nplaint pertains to an	
IACUC approved protocol, this protocol was reviewed and is compliant with USDA Animal Care						
regulations.						
We will continue to inspect this facility to make sure the AWA regulated animals are protected to the						
fullest extent of Federal law						
Application Kit Provided:						
Yes: No:						
Inspector:					Date:	
NAOMI SISMOUR					March 31, 2021	
Reviewed By:					Date:	
CAROLYN MCKINNIE					March 31, 2021	



March 22, 2021

Animal and Plant Health Inspection Service

Animal Care

Fort Collins Office 2150 Centre Avenue Building B, 3W11 Fort Collins, CO 80526 Phone: 970-494-7478 Dear Complainant,

Thank you for your correspondence dated January 28, 2021. We are reviewing your concerns and assigned tracking number AC21-186. Please allow us enough time (30 to 60 days) to thoroughly look into your concerns. You may submit a request to the Animal and Plant Health Inspection Service (APHIS) Freedom of Information Act (FOIA) office to obtain any publicly available information regarding our review.

FOIA Requests can be submitted three ways:

- 1. Web Request Form: <u>https://efoia-pal.usda.gov/App/Home.aspx</u>
- 2. Fax: 301-734-5941
- US Mail: USDA- APHIS- FOIA 4700 River Road, Unit 50 Riverdale, MD 20737

Should you have any questions regarding the APHIS FOIA process or need assistance using the Web Request Form **please contact the APHIS FOIA office at 301-851-4102**.

Animal Care is a program within the U.S. Department of Agriculture (USDA) that directs activities to ensure compliance with and enforcement of the Animal Welfare Act and the Horse Protection Act. Animal Care establishes standards of humane treatment for regulated animals and monitors and achieves compliance through inspections, enforcement, education, and cooperative efforts under the Acts.

Please be assured that we will look into your concern(s) and take appropriate action(s).

Thank you for your interest into the humane treatment of these animals.

Sincerely,

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Elizabeth Goldentyer, D.V.M. Deputy Administrator USDA, APHIS, Animal Care

From:	Gibbens, Robert - APHIS
To:	APHIS-AnimalCare; Winn, Jayson M - APHIS; Whisenton, Katie M - APHIS
Subject:	FW: APHIS complaint U Arizona Tucson violating AWA
Date:	Thursday, January 28, 2021 11:31:12 AM
Attachments:	Outlook-s41paca2.png
	2021-01-28 UA Tucson APHIS Complaint FINAL.pdf
	ADD I Surgery Residency Survey Results - Updated 2021-01-05.pdf
	ADD II Key Simulation Devices for Surgery Training 2020-04-06.pdf

Please handle as a complaint.

From: (b) (6), (b) (7)(C), (b) (7)(D) @pcrm.org>

Sent: Thursday, January 28, 2021 8:56 AMTo: Gibbens, Robert - APHIS <robert.m.gibbens@usda.gov>Subject: APHIS complaint -- U Arizona Tucson violating AWA

Jan. 28, 2021

Robert Gibbens, DVM Director, Animal Welfare Operations USDA/APHIS/Animal Care 2150 Centre Ave. Building B, Mailstop 3W11 Fort Collins, CO 80526-8117

Submitted by email (Robert.M.Gibbens@aphis.usda.gov)

Re: Use of Live Animals for General Surgery Residency Training at the University of Arizona Tucson

Dear Dr. Gibbens:

The Physicians Committee for Responsible Medicine requests that the Animal and Plant Health Inspection Service (APHIS) investigate the use of live animals for training at the University of Arizona College of Medicine – Tucson (UA Tucson), which is using animals to teach procedures to general surgery residents. This occurs despite the widespread use of educationally superior nonanimal training methods.

According to documents obtained by the Physicians Committee under the Arizona Public Records Law, the animal use protocol for the "Arizona Center for Endoscopic Surgery (ACES) Residency Training Course" is approved to use up to 183 pigs over three years. Some of the procedures performed under this protocol include:

- Laparoscopic Cholecystectomy (incisions are made to insert surgical tools and a lighted camera in order to remove the gallbladder)
- Laparoscopic Nephrectomy (incisions are made to insert surgical tools and a lighted camera in order to remove all or part of a kidney)
- Laparoscopic Nissen Fundoplication (incisions are made to insert surgical tools and a lighted camera, and a portion of the stomach is wrapped around the esophagus)

• Laparoscopic Splenectomy (incisions are made in the abdomen to insert surgical tools and a lighted camera in order to remove the spleen)

UA Tucson's animal use is at odds with the current standards of practice in general surgery residency training in the United States. According to an ongoing Physicians Committee survey, 76% of U.S. general surgery residencies (198 of 259) exclusively use nonanimal methods (see Addendum I). Other surgery residency programs in the state—including Mayo Clinic Phoenix, Midwestern University at Mountain Vista Medical Center, and UA's other general surgery residency program at the Phoenix campus—use only human-relevant nonanimal methods for training general surgery residents.

Under the Animal Welfare Act, UA Tucson meets the statutory definition of a "research facility" and is therefore required to comply with the statute's regulations and standards. As part of this required compliance, any use of live animals for research, testing, or training must be approved by UA Tucson's IACUC. UA Tucson is currently registered with the U.S. Department of Agriculture (USDA) under certification number 86-R-0003.

The Physicians Committee believes that inadequate oversight by UA Tucson's IACUC is responsible for the improper approval and ongoing use of live animals in its general surgery residency program. The specific regulatory violations are the following:

<u>1. UA Tucson's Justification of Animal Use Is Insufficient Because Alternatives Exist</u>

Section 2143 of the Animal Welfare Act and C.F.R. Title 9, Section 2.31(d)(1)(i, ii) of the Animal Welfare Act's implementing regulations require that the principal investigator (PI)—including course instructors—consider alternatives to procedures that may cause more than momentary or slight pain or distress to any animal used for research or educational purposes.

We believe that the PI did not meet this requirement because justification of animal use for general surgery residency training is not possible in view of the validation and widespread implementation of numerous nonanimal training methods. Having not provided objective evidence to support animal use in view of these alternatives, this requirement of the Animal Welfare Act was not met.

A proper alternatives search would have revealed nonanimal methods for the training of surgery residents and an abundance of peer-reviewed literature demonstrating the equivalence or superiority of simulation-based surgery training compared to animal use. Over the last three decades, surgical simulation has evolved with advances in technology and an imperative to replace the use of animals in surgery training courses. All surgery skills, including both open and laparoscopic procedures, can be taught using human-based methods, such as human-patient simulators, laparoscopic simulators, virtual reality simulators, human cadavers, and partial task trainers.

A study funded by the U.S. Army compared the physiological stress response in trainees using medical simulators versus live animals. The study, which was presented on Oct. 10, 2018, at

the annual meeting of the American College of Chest Physicians in San Antonio, found that there were no significant differences for peak stress response between the two methods and determined that "synthetic models can produce a stress response equivalent to that of live

tissue during simulation training."^[1][1]

There are many validated and widely implemented nonanimal simulation methods available to train general surgery residents, including the LAP Mentor by 3D Systems (formerly Simbionix), which UA Tucson already owns. LAP Mentor is a laparoscopic surgical simulator with advanced haptics and features a library of training modules, including basic and advanced suturing, incisional and inguinal hernia, nephrectomy, cholecystectomy, sigmoidectomy, Nissen fundoplication, gastric bypass, and lobectomy. Surgical Science's LapSim is a virtual reality laparoscopic simulator that can be used to train cholecystectomy, nephrectomy, suturing and anastomosis, appendectomy, hysterectomy, inguinal hernia repair, lobectomy, and bariatric procedures.

Maximum Fidelity Surgical Simulations' EnvivoPC uses state-of-the-art technology including simulated blood and a pump—to create a perfused cadaver that mimics heart function and circulation while allowing for hands-on training in procedures involving active bleeding. EnvivoPC can be used to perform a variety of surgical procedures, including cholecystectomy, nephrectomy, splenectomy, colectomy, bowel resection and anastomosis, liver resection, and ventral and para-esophageal hernia repair.

Another long-validated and widely implemented example of these human-based methods is Simulab's TraumaMan System, a realistic anatomical human body simulator with lifelike skin, subcutaneous fat, and muscle. The TraumaMan System can be used to replace the use of live animals for numerous procedures, including chest tube placement, tracheostomy, diagnostic peritoneal lavage, cricothyroidotomy, pericardiocentesis, needle decompression, pneumothorax drainage, tracheostomy, and intravenous cutdown. Simulab also offers a Surgical Abdomen for TraumaMan (or as a stand-alone trainer), that features simulated pumping blood and can be used for both open and laparoscopic procedures, including repair of a nicked or lacerated aorta, renal artery, and kidney, cholecystectomy, and options to build individualized training modules. The TraumaMan System is endorsed by the American College of Surgeons for trauma training and is used by many Advanced Trauma Life Support (ATLS) programs.

Addendum II presents a sampling of key training devices available to replace animal use in UA Tucson's general surgery residency training.

In addition, the university already has a 30,000 square foot state-of-the-art facility—the <u>Arizona Simulation Technology and Education Center</u>—which offers a range of high-fidelity patient mannequins, virtual reality trainers, and procedural task trainers that could provide the simulation capabilities to replace the use of animals in the general surgery residency.

2. The Use of Animals for General Surgery Residency Training Is Not "Unavoidable"

The Animal Welfare Act also requires that activities involving animals be designed to "assure that discomfort and pain to animals will be limited to that which is unavoidable for the conduct of scientifically valuable research." 9 C.F.R. § 2.31(e)(4).

We believe that this requirement was not met by the PI because of the widespread

availability of validated simulators and the fact that 76% of surveyed U.S. general surgery residency programs do not use live animals. This clearly demonstrates that such use of live animals is not "unavoidable."

3. UA Tucson's IACUC Is Failing to Properly Oversee Animal Use

Section 2143 of the Animal Welfare Act and Title 9, Section 2.31(d)(1)(i, ii) of the Animal Welfare Act's implementing regulations require that the IACUC enforce the requirements described in items 1 and 2 above and thereby determine that the proposed activities are in accordance with the Animal Welfare Act and C.F.R Title 9, Section 2.31(d).

We believe that these requirements were not met by UA Tucson's IACUC because the animal use protocol was approved despite the violations described in items 1 and 2 above. Thus, the Physicians Committee alleges inadequate institutional oversight by UA Tucson's IACUC.

Accordingly, the Physicians Committee requests that APHIS investigate this matter to find UA Tucson and its IACUC in violation of the Animal Welfare Act and its implementing regulations, as detailed above, and to order correction and appropriate penalties.

Thank you for your attention.



(b) (6), (b) (7)(C)	

Addendums

- 1. Animal Use in General Surgery Residency Programs in the United States: An Ongoing Survey
- 2. Simulation for General Surgery Residency Training: A Sampling of Key Devices

[2] [1] Keller J., Hart D., Rule G., Bonnett T., Sweet R. The Physiologic Stress Response of Learners During Critical Care Procedures: Live Tissue vs. Synthetic Models. Poster presentation at CHEST Annual Meeting 2018, San Antonio, Tex.



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5100 Wisconsin Ave. NW, Suite 400 • Washington, DC 20016 • Tel: 202-686-2210 • Fax: 202-686-2216 • pcrm@pcrm.org

Jan. 28, 2021

Robert Gibbens, DVM Director, Animal Welfare Operations USDA/APHIS/Animal Care 2150 Centre Ave. Building B, Mailstop 3W11 Fort Collins, CO 80526-8117

Submitted by email (Robert.M.Gibbens@aphis.usda.gov)

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Thank you for your attention.



(b) (6), (b) (7)(C)	
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Addendums

- I. Animal Use in General Surgery Residency Programs in the United States: An Ongoing Survey
- II. Simulation for General Surgery Residency Training: A Sampling of Key Devices

PhysiciansCommittee

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5100 Wisconsin Ave. NW, Suite 400 • Washington, DC 20016 • Tel: 202-686-2210 • Fax: 202-686-2216 • pcrm@pcrm.org

Animal Use in General Surgery Residency Programs in the United States: An Ongoing Survey

Updated: Jan. 5, 2021

Programs Using Live Animals (61)

- AdventHealth Orlando Orlando, Fla.
- Ascension Macomb-Oakland Hospital Warren, Mich.
- Ascension Providence/Michigan State University College of Human Medicine (MSUCHM) Southfield, Mich.
- Beaumont Health (Royal Oak) Royal Oak, Mich.
- Campbell University Fayetteville, N.C.
- Cedars-Sinai Medical Center Los Angeles, Calif.
- Creighton University School of Medicine/Maricopa Medical Center (Phoenix) Phoenix, Ariz.
- Creighton University School of Medicine/St. Joseph's Medical Center (Phoenix) Phoenix, Ariz.
- Danbury Hospital Danbury, Conn.
- George Washington University Washington, D.C.
- HCA Medical City Fort Worth Fort Worth, Texas
- Henry Ford Wyandotte Hospital Wyandotte, Mich.
- Icahn School of Medicine at Mount Sinai New York, N.Y.
- Johns Hopkins University Baltimore, Md.
- Kaiser Permanente Southern California (Los Angeles) Los Angeles, Calif.
- Los Angeles County-Harbor-UCLA Medical Center Torrance, Calif.
- Loyola University Medical Center Maywood, Ill.
- Massachusetts General Hospital Boston, Mass.
- McGaw Medical Center of Northwestern University Chicago, Ill.
- Medical University of South Carolina Charleston, S.C.
- Montefiore Medical Center/Albert Einstein College of Medicine Bronx, N.Y.
- Morehouse School of Medicine Atlanta, Ga.
- Naval Medical Center (San Diego) San Diego, Calif.
- New Hanover Regional Medical Center Wilmington, N.C.
- New York Medical College at Metropolitan Hospital Center New York, N.Y.
- New York Presbyterian Hospital (Columbia Campus) New York, N.Y.
- New York University (NYU) Grossman School of Medicine (Brooklyn) Brooklyn, N.Y.
- New York University (NYU) Grossman School of Medicine New York, N.Y.
- Oregon Health & Science University Portland, Ore.
- Orlando Health Orlando, Fla.
- Prisma Health-Upstate/University of South Carolina School of Medicine Greenville Greenville, S.C.
- Riverside University Health System/University of California Riverside Moreno Valley, Calif.
- Saint Joseph Hospital Denver, Colo.
- Sparrow Hospital Lansing, Mich.
- Spartanburg Regional Healthcare System Spartanburg, S.C.

- St. Agnes Healthcare Baltimore, Md.
- Stamford Hospital/Columbia University College of Physicians and Surgeons Stamford, Conn.
- St. Elizabeth Youngstown Hospital/Northeast Ohio Medical University (NEOMED) Youngstown, Ohio
- St. Mary's Hospital (Waterbury) Waterbury, Conn.
- TriHealth (Good Samaritan Hospital) Cincinnati, Ohio
- University of Alabama Medical Center Birmingham, Ala.
- University of Arizona College of Medicine (Tucson) Tucson, Ariz.
- University of California Davis Health Sacramento, Calif.
- University of California (San Diego) Medical Center La Jolla, Calif.
- University of Cincinnati Medical Center/College of Medicine Cincinnati, Ohio
- University of Colorado Aurora, Colo.
- University of Connecticut Farmington, Conn.
- University of Florida Gainesville, Fla.
- University of Kansas School of Medicine Kansas City, Kan.
- University of Louisville School of Medicine Louisville, Ky.
- University of Maryland Baltimore, Md.
- University of Miami/Jackson Health System Miami, Fla.
- University of Mississippi Medical Center Jackson, Miss.
- University of Puerto Rico San Juan, Puerto Rico
- University of South Alabama Mobile, Ala.
- University of Southern California/LAC+USC Medical Center Los Angeles, Calif.
- University of Tennessee College of Medicine at Chattanooga Chattanooga, Tenn.
- University of Texas Health Science Center at Houston Houston, Texas
- University of Washington Seattle, Wash.
- Wake Forest University School of Medicine Winston-Salem, N.C.
- Western Michigan University Homer Stryker MD School of Medicine Kalamazoo, Mich.

Programs Using Only Nonanimal Methods (198)

Alabama (1)

• Brookwood Baptist Health – Birmingham

Arizona (5)

- Abrazo Health Network Glendale
- HonorHealth John C. Lincoln Medical Center Phoenix
- Mayo Clinic College of Medicine and Science (Arizona) Phoenix
- Midwestern University Graduate Medical Education (GME) Consortium/Mountain Vista – Mesa
- University of Arizona College of Medicine (Phoenix) Phoenix

Arkansas (1)

• University of Arkansas for Medical Sciences – Little Rock

California (13)

- Arrowhead Regional Medical Center/Kaiser Permanente (Fontana) – Colton
- Community Memorial Health System Ventura
- Huntington Memorial Hospital Pasadena
- Kaweah Delta Health Care District (KDHCD) Visalia
- Loma Linda University Health Education Consortium – Loma Linda
- Riverside Community Hospital/University of California

Riverside School of Medicine – Riverside

- San Joaquin General Hospital French Camp
- Santa Barbara Cottage Hospital Santa Barbara
- Stanford Health Care-Sponsored Stanford University – Stanford
- University of California Los Angeles David Geffen School of Medicine/UCLA Medical Center – Los Angeles
- University of California San Francisco (East Bay) – Oakland
- University of California (San Francisco)/Fresno – Fresno
- University of California San Francisco San Francisco

Colorado (3)

- HCA HealthONE/Sky Ridge Medical Center – Lone Tree
- HCA HealthONE/Swedish Medical Center – Englewood
- Kansas City University of Medicine and Biosciences-GME Consortium/St. Anthony Hospital – Lakewood

Connecticut (2)

- Quinnipiac University Frank H. Netter MD School of Medicine (Waterbury Hospital) – Waterbury
- Yale-New Haven Medical Center New Haven

Delaware (1)

• Christiana Care Health Services – Newark

District of Columbia (2)

- Howard University Washington
- MedStar Health/Georgetown-Washington Hospital – Washington

Florida (18)

- Broward Health Fort Lauderdale
- Cleveland Clinic (Florida) Weston
- Florida Atlantic University Charles E. Schmidt College of Medicine – Boca Raton

- Florida State University College of Medicine Tallahassee
- HCA Healthcare/East Florida Division GME/Kendall Regional Medical Center – Miami
- HCA Healthcare/Mercer University School of Medicine/Orange Park Medical Center – Orange Park
- HCA Healthcare/University of South Florida Morsani College of Medicine GME/Brandon Regional Hospital – Brandon
- HCA Healthcare/University of South Florida Morsani College of Medicine GME/Regional Medical Center Bayonet Point – Hudson
- Larkin Community Hospital South Miami
- Mayo Clinic College of Medicine and Science (Jacksonville) Jacksonville
- Memorial Healthcare System (Hollywood) – Pembroke Pines
- Mount Sinai Medical Center of Florida – Miami Beach
- University of Central Florida/HCA Healthcare GME (Greater Orlando) – Orlando
- University of Central Florida/HCA Healthcare GME (Ocala) – Ocala
- University of Florida College of Medicine Jacksonville – Jacksonville
- University of Miami Hospital and Clinics/Holy Cross Hospital – Fort Lauderdale
- University of Miami/JFK Medical Center Palm Beach Regional GME Consortium – Atlantis
- University of South Florida Morsani Tampa

Georgia (7)

- Dwight David Eisenhower Army Medical Center – Fort Gordon
- Emory University School of Medicine Atlanta
- HCA Healthcare/Mercer University School of Medicine/Memorial Health University – Savannah

- Medical Center of Central Georgia/Mercer University School of Medicine – Macon
- Medical College of Georgia Augusta
- Northeast Georgia Medical Center Gainesville
- WellStar Atlanta Medical Center Atlanta

Hawaii (1)

• University of Hawaii – Honolulu

Illinois (10)

- Carle Foundation Hospital Urbana
- Franciscan Health Olympia Fields Olympia Fields
- Presence Saint Joseph Hospital (Chicago) – Chicago
- Rush University Medical Center Chicago
- Southern Illinois University Springfield
- University of Chicago Chicago
- University of Illinois College of Medicine at Chicago Chicago
- University of Illinois College of Medicine at Chicago (Metropolitan Group) – Chicago
- University of Illinois College of Medicine at Chicago (Mount Sinai) – Chicago
- University of Illinois College of Medicine at Peoria Peoria

Indiana (1)

• St. Vincent Hospitals and Health Care Center – Indianapolis

Iowa (2)

- Central Iowa Health System (Iowa Methodist Medical Center) – Des Moines
- Iowa Medical Education Collaborative Des Moines

Kansas (2)

• HCA Healthcare Kansas City/Menorah Medical Center – Overland Park • University of Kansas (Wichita) – Wichita

Kentucky (1)

• University of Kentucky College of Medicine (Bowling Green) – Bowling Green

Louisiana (4)

- Louisiana State University New Orleans
- Louisiana State University (Shreveport)
 Shreveport
- Ochsner Clinic Foundation New Orleans
- Tulane University New Orleans

Maine (1)

• Maine Medical Center – Portland

Maryland (4)

- Anne Arundel Medical Center Annapolis
- MedStar Health (Baltimore) Baltimore
- National Capital Consortium Bethesda
- Sinai Hospital of Baltimore Baltimore

Massachusetts (9)

- Berkshire Medical Center Pittsfield
- Beth Israel Deaconess Medical Center Boston
- Boston University Medical Center Boston
- Brigham and Women's Hospital Boston
- Lahey Hospital and Medical Center Burlington
- St. Elizabeth's Medical Center Boston
- Tufts Medical Center Boston
- University of Massachusetts Medical School/Baystate Medical Center – Springfield
- University of Massachusetts Worcester

Michigan (16)

- Ascension Genesys Hospital Grand Blanc
- Ascension St. John Hospital Detroit

- Beaumont Health (Farmington Hills) Farmington Hills
- Beaumont Health (Trenton and Dearborn) Trenton
- Central Michigan University College of Medicine – Saginaw
- Detroit Medical Center Corporation Detroit
- Detroit Medical Center/Wayne State University – Detroit
- Henry Ford Allegiance Health Jackson
- Henry Ford Hospital/Wayne State University – Detroit
- Henry Ford Macomb Hospital Clinton Township
- McLaren Health Care/Greater Lansing/Michigan State University – Lansing
- McLaren Health Care/Macomb/Michigan State University – Mount Clemens
- Spectrum Health/Michigan State University – Grand Rapids
- St. Joseph Mercy Ann Arbor Ypsilanti
- St. Joseph Mercy-Oakland Pontiac
- University of Michigan Health System Ann Arbor

Minnesota (1)

• University of Minnesota – Minneapolis

Missouri (2)

- Kansas City University of Medicine and Biosciences-GME Consortium /St. Mary's Medical Center – Blue Springs
- University of Missouri-Kansas City School of Medicine – Kansas City

Nebraska (1)

• Creighton University School of Medicine (Omaha) – Omaha

Nevada (2)

- University of Nevada Las Vegas (UNLV) School of Medicine – Las Vegas
- Valley Health System Las Vegas

New Hampshire (1)

• Dartmouth-Hitchcock/Mary Hitchcock Memorial Hospital – Lebanon

New Jersey (13)

- Atlantic Health (Morristown) Morristown
- Hackensack University Medical Center - Hackensack
- Hackensack University Medical Center (Palisades) North Bergen
- Hoboken University Medical Center Bayonne
- Inspira Health Network Vineland
- Jersey Shore University Medical Center – Neptune City
- Monmouth Medical Center Long Branch
- Rowan School of Osteopathic Medicine/Jefferson Health/Virtua Our Lady of Lourdes Hospital – Stratford
- Rutgers New Jersey Medical School Newark
- Rutgers New Jersey Medical School/St. Barnabas Medical Center – Newark
- Rutgers Robert Wood Johnson Medical School – New Brunswick
- St. Barnabas Medical Center Livingston
- St. Joseph's University Medical Center - Paterson

New Mexico (1)

• University of New Mexico School of Medicine – Albuquerque

New York (23)

- Arnot Ogden Medical Center Elmira
- Bassett Medical Center Cooperstown
- BronxCare Health System Bronx
- Brookdale University Hospital and Medical Center Brooklyn
- Flushing Hospital Medical Center Flushing
- Harlem Hospital Center New York
- Health Quest Poughkeepsie
- Icahn School of Medicine at Mount Sinai (Morningside/West) – New York
- Icahn School of Medicine at Mount Sinai (South Nassau) – Oceanside

- Lincoln Medical and Mental Health Center – Bronx
- Maimonides Medical Center Brooklyn
- New York-Presbyterian Brooklyn Methodist Hospital – Brooklyn
- New York Presbyterian Hospital (Cornell Campus) – New York
- Orange Regional Medical Center Middletown
- St. Barnabas Hospital Bronx
- St. John's Episcopal Hospital-South Shore Far Rockaway
- Stony Brook Medicine/University Hospital – Stony Brook
- SUNY Health Science Center at Brooklyn Brooklyn
- University of Rochester Rochester
- Westchester Medical Center Valhalla
- Wyckoff Heights Medical Center Brooklyn
- Zucker School of Medicine at Hofstra/Northwell at Lenox Hill Hospital – New York
- Zucker School of Medicine at Hofstra/Northwell at Staten Island University Hospital – Staten Island

North Carolina (3)

- Mountain Area Health Education Center – Asheville
- University of North Carolina Hospitals Chapel Hill
- Vidant Medical Center/East Carolina University – Greenville

North Dakota (1)

• University of North Dakota – Grand Forks

Ohio (12)

- Akron General Medical Center/Northeast Ohio Medical University (NEOMED) – Akron
- Cleveland Clinic Foundation Cleveland
- Cleveland Clinic Foundation/South Pointe Hospital – Warrensville Heights
- Jewish Hospital of Cincinnati Cincinnati

- Kettering Health Network Dayton
- Mercy St. Vincent Medical Center Toledo
- Mount Carmel Health System Grove City
- OhioHealth/Doctors Hospital Columbus
- Summa Health System/Northeast Ohio Medical University (NEOMED) – Akron
- University of Toledo Toledo
- Western Reserve Hospital Cuyahoga Falls
- Wright State University Dayton

Oklahoma (2)

- Oklahoma State University Center for Health Sciences – Tulsa
- University of Oklahoma Health Sciences Center – Oklahoma City

Oregon (1)

• Samaritan Health Services (Corvallis) – Corvallis

Pennsylvania (8)

- Albert Einstein Healthcare Network Philadelphia
- Easton Hospital Easton
- Geisinger Health System Danville
- Lehigh Valley Health Network/University of South Florida College of Medicine – Allentown
- Main Line Health System/Lankenau Medical Center Wynnewood
- Sidney Kimmel Medical College at Thomas Jefferson University/TJUH – Philadelphia
- St. Luke's Hospital Bethlehem
- University of Pittsburgh Medical Center (UPMC) Medical Education (Mercy) – Pittsburgh

Rhode Island (1)

• Brown University – Providence

South Carolina (2)

• HCA Healthcare Grand Strand Regional Medical Center – Myrtle Beach

• Prisma Health-Midlands/University of South Carolina School of Medicine (Columbia) – Columbia

South Dakota (1)

• University of South Dakota School of Medicine – Sioux Falls

Tennessee (1)

• University of Tennessee Health Science Center/Saint Thomas West Hospital – Nashville

Texas (3)

- University of Texas Health Science Center at Tyler – Tyler
- University of Texas Medical Branch Hospitals – Galveston
- University of Texas Rio Grande Valley/Doctors Hospital at Renaissance – Edinburg

Utah (1)

• University of Utah Health – Salt Lake City

Vermont (1)

• University of Vermont Medical Center – Burlington

Virginia (6)

- Carilion Clinic-Virginia Tech Carilion School of Medicine – Roanoke
- Eastern Virginia Medical School Norfolk
- Inova Fairfax Medical Campus/Inova Fairfax Hospital for Children – Falls Church
- Naval Medical Center (Portsmouth) Portsmouth
- University of Virginia Medical Center Charlottesville
- Virginia Commonwealth University Health System – Richmond

Washington (3)

- St. Joseph's Hospital Tacoma
- Swedish Medical Center/First Hill Seattle

• Virginia Mason Medical Center – Seattle

West Virginia (2)

- Charleston Area Medical Center/West Virginia University (Charleston Division) – Charleston
- Marshall University School of Medicine - Huntington

Wisconsin (2)

- Gundersen Lutheran Medical Foundation – La Crosse
- University of Wisconsin Hospitals and Clinics Madison



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Simulation for General Surgery Residency Training: A Sampling of Key Devices

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Over the last three decades, advances in technology and a need for human-relevant models have contributed to the development of a significant variety of robust options for surgical simulation that are widely available. All surgery skills can now be taught using human-relevant methods, such as laparoscopic simulators, virtual reality simulators, human cadavers, human-patient simulators, and partial task trainers. These methods allow trainees to improve their skills through iterative learning and repetitive practice. In this document we highlight only a few of the many simulation devices available for this field.



SimMan 3G

Laerdal

SimMan 3G is a high-fidelity, full-body patient simulator that displays both physiological fidelity and pathology. It can be used to teach cricothyroidotomy, chest tube placement, bleeding and hemorrhage control, endotracheal intubation, retrograde intubation, intraosseous needle insertion, intravenous insertion, and urinary catheterization. SimMan 3G can be programmed to simulate a multitude of scenarios requiring defibrillation, cardiac pacing, and the administration of cardiac medications.

PCRM.ORG



LAP Mentor 3D Systems (formerly Simbionix)

LAP Mentor is a virtual reality simulator with haptic feedback that allows for trainees to practice a variety of techniques, from essential laparoscopic skills to advanced procedures. LAP Mentor can be used to teach basic and advanced suturing, incisional and inguinal hernia repair, nephrectomy, cholangiography, cholecystectomy, gastric bypass, lobectomy, hysterectomy, appendectomy, and Nissen fundoplication.



TraumaMan System

Simulab Corporation

The most widely used trauma and surgical simulator in the world, the TraumaMan System is a high-fidelity human-body mannequin with lifelike skin, subcutaneous fat, and muscle. TraumaMan can be used to train a variety of surgical procedures, such as chest tube placement, tracheostomy, cricothyroidotomy, intravenous cutdown, and pericardiocentesis. The Surgical Abdomen for TraumaMan features simulated pumping blood and can be used for both open and laparoscopic procedures, including repair of a nicked or lacerated aorta, renal artery, kidney, and cholecystectomy.



Trauma Thoracotomy Trainer

The Chamberlain Group

Developed in collaboration with Massachusetts General Hospital to train residents in high stakes trauma surgery, the Trauma Thoracotomy Trainer is a highfidelity simulator that features realistic skin and beating-heart technology. The Trauma Thoracotomy Trainer can be used to practice open thoracotomy, chest tube placement, aortic cross-clamping, pericardiotomy with open cardiac massage, and cardiac laceration with active bleed.



EnvivoPC Perfused Cadaver

Maximum Fidelity Surgical Simulations, LLC

The EnvivoPC simulator uses state-of-the-art technology—including simulated blood and a pump—to create a perfused cadaver that mimics heart function and circulation while allowing for hands-on training in procedures involving active bleeding. EnvivoPC can be used to perform nephrectomy, splenectomy, colectomy, cholecystectomy, bowel resection and anastomosis, liver resection, adrenalectomy, bariatrics, ventral and paraesophageal hernia repair, and hemorrhage control.

The Physicians Committee for Responsible Medicine is leading a revolution in medicine—putting a new focus on health and compassion. The Physicians Committee combines the clout and expertise of more than 12,000 physicians with the dedicated actions of 140,000 members across the United States and around the world.

To learn more, visit: <u>PhysiciansCommittee.org/Research</u>